REMARKS

The present Response is submitted in reply to the Office Action of August 24, 2004.

The Examiner rejected claims 1 through 23 over prior art cited by the Examiner. In response to such action, the Applicant canceled claims 1-23 in favor of new claims 24-36 to more explicitly recite the aspects and limitations of the present invention, as will be discussed below with regard to the cited prior art.

The Examiner also noted an informality in Fig. 5 and offered the Applicant the opportunity to address and correct this informality, but has not required a drawing correction.

In response, the Applicant thanks the Examiner for pointing out the informality in Fig. 5 and the Applicant amended the drawings per the attached Submission to overcome the noted informality therein. New formal drawings, incorporating the requested amendments, will follow once the requested drawing amendments are approved by the Examiner.

It should be noted that this amendment to Fig. 5 does not introduced any new matter but only corrects the drawing informality. If any further amendment to the drawings of this application is believed necessary, the Examiner is invited to contact the undersigned representative of the Applicant to discuss the same.

Next, considering the rejections of the claims over the cited prior art, and first considering the present invention as recited, for example, in new claim 24, the present invention is directed to a security system for a protected object wherein the security system includes a security controller and a plurality of signal transmitters associated with the protected object and a portable transponder. According to the present invention, the security controller associated with the protected object directs each of the associated transmitters to transmit a challenge signal wherein each challenge signal and its associated transmitter are uniquely identifiable for a characteristic of the challenge signal, such as the time sequence in which the challenge signals are transmitted. The transponder, in turn, includes a plurality of orthogonally oriented and directionally sensitive sensors for receiving each of the challenge signals and detecting a

component of each challenge signal, such as the signal strength of a challenge signal along the multiple orientation axes of the sensor. In a presently preferred embodiment of the invention, for example, the signal strength measurements are of the strengths along each sensor axis of near magnetic fields generated by transmitters when transmitting the challenge signals.

According to the present invention, each challenge signal as received by the orthogonally oriented, directionally sensitive sensors contains vector information that is dependent upon the location and orientation of the axes of the sensors with respect to the transmitters. That is, and expressed another but equivalent way, the combination of signal strength measurements taken by the orthogonally oriented, directionally sensitive sensors for a given challenge signal and along the axis of each sensor together comprise a vector having a signal strength component along the axis of each sensor. The vector, in turn, thereby points along a vector axis between the sensors and the transmitter transmitting the challenge signal.

The transponder thereby extracts a vector from each of the challenge signals wherein each vector points to the transmitter transmitting the corresponding challenge signal and wherein the combination of vectors extracted from the challenge signals will identify the location of the sensors and thus of the transponder with respect to the transmitters. According to the present invention, the vector information extracted from each of the challenge signals by the transponder can then be transmitted from the transponder to the security controller, for example by a response signal transmitted by the transponder to the security controller in reply to each challenge signal. Given that the locations of the transmitters in a space associated with the protected object are known, the security controller can then determine the location of the transponder in the space associated object from the vector information transmitted in the response signals.

In this regard, it must be noted that the resolution of the vectors to identify the location of the transponder in the space associated object can be accomplished in a number of ways. For example, the reverse vectors from the transmitters to the transponder may be determined

by the security controller from the vector information in the response signals by mathematical operations of a well understood nature. In a presently preferred embodiment of the invention, however, the transformation of vector information into transponder location is accomplished in the security controller by means of a vector comparator and vector map that relates vector information to corresponding transponder locations. It should also be noted that the operations for resolving the vector information captured by the transponder into a location of the transponder relative to the transmitters may be performed in the transponder, particularly if the vector information is resolved by mathematical operations rather than by means of a vector map.

In summary, therefore, the plurality of transmitters associated with the protected object and the security controller each transmit a challenge signal containing vector information pertaining to the location of the orthogonally oriented, directionally sensitive sensors and thus of the transponder. As described, the vector information is a result of the location in space of the orthogonally oriented, directionally sensitive sensors within the near magnetic fields of the transmitted challenge signals and appears as differences in the magnetic field signal strength along each of the axes of the sensors. The transponder extracts the vector information from the challenge signals through the sensors, and transmits the vector information to the security controller in corresponding response signals. The security controller then resolves the vector information to determine the vectors between the transmitters and the transponder, and thus the location in space of the transponder relative to the transmitters.

Considering each of the rejections of the claims in turn, the Examiner rejected 1, 3, 5, 6, 10, 112-16, 19-20 and 22-23 under 35 U.S.C. §§ 102(e) as anticipated by Stippler `932. The Applicant acknowledges and respectfully traverses all of the raised rejections in view of the following remarks.

Stippler `932 describes a motor vehicle anti-theft system based upon a comparison of challenge signals transmitted by a plurality of transmitters in a security system in a vehicle and

corresponding encoded response signals transmitted by a portable code transmitter. According to Stippler `932, challenge/response signal security systems using one or more transmitters at the vehicle and a portable response transmitter are well known, but can typically be bypassed by a counterfeit transmitter transmitting counterfeit response signals by any of a variety of methods. Stippler `932 further states, however, that this problem can be overcome by encoding the response signals with some factor that is dependent upon the immediate, current situation rather than upon some code than can be recorded and played back or otherwise simulated by a counterfeit transmitter.

In this regard, Stippler `932 notes that the signal strength of the challenge signals received by an authentic code transmitter will vary according to the specific location of the code transmitter with respect to the transmitters while counterfeit code transmitter systems of various types, which typically transmit only pre-recorded response signals, are not sensitive to such factors. Stippler `932 accordingly recognizes that the received signal strengths are a random situation dependent factor that can be used to uniquely encode the response signals at each use of the code transmitter.

Considering Stippler `932 in further detail, the Stippler `932 challenge transmitters are distributed around a vehicle so that the corresponding challenge signals received by a code transmitter will have different signal strengths, depending upon such factors as the distance between the transmitter and the receiver, the relative orientation of the transmitter and receiver antennas, differences in phase among the challenge signals, and differences introduced at the transmitters by, for example, control of the transmitted signal power or phase. The code transmitter will detect the signal power of each challenge signal and will encode the signal power measurement in the corresponding response signal transmitted back to the security system. The security system will then compare the received challenge signal strengths as indicated in the coded response signals with the transmitted challenge signal strengths as indicated by the transmitters, and will authenticate the code transmitter if the appropriate

differences in signal strengths appear in the comparisons of the transmitted and received challenge signal strengths.

The Examiner cites Stippler `932 as teaching a number of aspects of the present invention. For example, the Examiner states that Stippler `932 teaches a security system having a security controller and a number of associated transmitters distributed about a vehicle and transmitting corresponding challenge signals and a portable code transmitter, or transponder, transmitting corresponding response signals that are encoded according to some aspect of the received challenge signals.

The Applicant does not dispute the Examiner's statements that Stippler `932 teaches a security system having a security controller and a number of associated transmitters distributed about a vehicle and transmitting corresponding challenge signals and a portable transponder transmitting corresponding response signals that are encoded according to some aspect of the received challenge signals. The Applicant concurs that these aspects of the present invention, and of the teachings of Stippler `932, have long been well known in the relevant arts, but wishes to point out that these aspects of the embodiments of the present invention are not the essential subject matter of the present invention.

The Examiner further states, however, that the Stippler `932 system extracts and uses vector information, that is, not only signal strength information but information representing the direction as well as the distance to the signal source. In support of this position, the Examiner refers to Stippler `932 at, for example, column 3, lines 9-27 and column 7, lines 1-25, as well as other places in Stippler `932.

The Applicant respectfully disagrees, however, with the Examiner's position that the Stippler `932 system extracts or uses vector information to authenticate a transponder/ transponder or for any other purpose, such as determining the physical location of a transponder relative to the transmitters. For example, the fundamental operating principles of the Stippler `932 are described, at column 1, line 64 through column 2, line 5, and at column 5,

lines 1-27, where Stippler `932 states that the system authenticates a given transponder by comparing the received challenge signal strength information encoded in each response signal with the received challenge signal strength information encoded in each of the other response signals and authenticating the transponder if there are appropriate differences between the received challenge signal strengths. It must be noted, in this regard, that there is no mention or consideration the extraction of vector information from the received challenge signal, of any use of vector information extracted from the received challenge signals.

In this regard, it is noted that at column 7, lines 1-24, Stippler `932 recognizes that a challenge signal as received at a transponder may be described as comprising three mutually orthogonal components, one along each of the x, y and z axes, and that the relative strengths of each of the received signal components will depend upon the location of the transponder with respect to the transmitter of the challenge signal. Stippler `932 then describes a transponder as having three directional antennas oriented at right angles to one another to measure the strength of the received challenge signal along each of the three antenna axes. The transmission of a single challenge signal will, therefore, result in three corresponding received signal strength measurements, one along each of the x, y and z axes of the antennas.

While a reading of Stippler `932 to this point may give an impression that Stippler `932 has discovered the vector characteristics of a received challenge signal as a function of the relative orientation and distance between the transmitter and the transponder, a closer reading of the next sections of Stippler `932's description dispels this impression.

That is, and in complete and fundamental contrast from the present invention, Stippler `932 clearly describes that the three signal strength components of each received challenge signal are treated merely as three separate signal strength measurements and are transmitted to the security controller in a response signal as three separate measurements. The security control then continues to treat the three signal strength measurements from each received challenge signal as separate measurements and compares each of the three

measurements corresponding to one challenge signal with the like component of the three separate measurements taken from other challenge signals. The system of Stippler `932 then looks for appropriate signal strength differences from one challenge signal to another, as in the basic Stippler `932 system described above, except that in this case each comparison is comprised of three separate comparisons, each being of like components of separate challenge signals.

In summary, therefore, the Stippler `932 system operates purely on the basis of the comparison of the received challenge signal strengths at the transponder, whether a measurement comprises a single overall signal strength or of three individual signal strength components.

Stippler `932 is, therefore, in complete and fundamental contrast from the present invention because at no time does Stippler `932 ever extract vector information from the received challenge signal or employ such vector information. Stippler `932 does not even suggest that such vector information is useful, or how such vector information might be used, but operates solely on the basis of signal amplitude measurements, that is, solely on the basis of scalar measurements rather than, as in the present invention, vector measurements.

In further distinction between the present invention and the teachings of Stippler `932, it must be noted that Stippler `932 does not attempt to determine the location of a transponder with respect to the security system transmitters, and does not attempt or even suggest the determination of a vector, that is, a distance and a direction, between one or more transmitters and the transponder, and in fact does not even have the facilities to do so. Instead, and in basic contrast from the present invention, the Stippler `932 system only attempts to determine whether the transponder is at a different distance from each transponder, and does not even attempt to determine the actual distances between the transponder and the transmitter. This is, however, in accordance with the described purpose and function of the Stippler `932 system, which is to put variable situation dependent encoded information into each response

signal, that is, a distance between the transponder and the corresponding transmitter relative to the distances between the transponder and the other transmitters, in order to distinguish an authentic transponder from a counterfeit transponder.

In fundamental contrast from Stippler `932, the purpose and function of the present invention is to determine the specific location of the transponder with respect to the transmitters in terms of a distance and direction from the transponder to each transmitter, that is, vectors between the transponder and each transmitter, and to thereby identify the specific location of the transponder in the space around the transmitters.

It will be readily apparent that the purpose and function of the present invention is in complete contrast from that of the Stippler `932 system, and that these differences explicitly appear in the elements recited in the claims for carrying out the invention.

For these reasons, therefore, it is the belief and position of the Applicant that claim 24 and new claim 37 are completely and patentably distinguished over and from the teachings of Stippler `932 under the requirements and provisions of 35 U.S.C. § 102 and 35 U.S.C. § 103.

Further in this regard, dependent claims 25-36 and 38-44 are respectively dependent from independent base claims 24 and 37 and thereby respectively incorporate all of the recitations and limitations of base claims 24 and 37. It is, therefore, the belief and position of the Applicant that dependent claims 25-36 and 38-44 are thereby completely and patentably distinguished over and from the teachings of Stippler `932 under the requirements and provisions of 35 U.S.C. § 102 and 35 U.S.C. § 103 for the same reasons that claims 24 and 37 are distinguished over and from the teachings of completely and patentably distinguished over and from the teachings of Stippler `932. The Applicant thereby respectfully requests that the Examiner reconsider and withdraw all rejections of the claims over Stippler `932 under 35 U.S.C. § 102 and allow claims 24-44.

Continuing with the Examiner's rejections of the claims, the Examiner also rejects claims 2, 4, 7 and 11 under 35 U.S.C. § 103 over Stippler `932 in combination with Seal `438.

The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the following remarks.

The distinctions of the present invention as recited in independent claims 24 and 37 and in dependent claims 25-36 and 38-44 over Stippler `932 are discussed above. As discussed above, it is the belief and position of the Applicant that all of the present pending claims are fully and patentably distinguished over and from Stippler `932 for the reasons discussed above.

Referring therefore to Seal `438, and in particular to the Abstract, column 2, lines 3-29; column 3, lines 1-63, and column 5, lines 12-60, Seal `438 describes a system for locating the position of a tag relative to a plurality of transmitters. Each transmitter includes a three mutually orthogonal, directional antenna elements wherein each directional antenna element is driven by a corresponding one of three phase related signals, so that each antenna will thereby transmit a signal having a phase that rotates in a complex pattern in three dimensional space. The tag, in turn, includes a simple magnetic loop antenna for receiving the phase rotating signals from each of the antenna and compares the phases of the signals received from each of the antennas to compute the position of the tag in space with respect to the antennas.

It will, therefore, be apparent that there are a number of fundamental differences between the system of the present invention and the system taught by Seal `438. For example, Seal `438 requires that each transmitting antenna comprise three mutually orthogonal directional antennas, each of which is driven by a corresponding one of three phase related signals in order to generate a transmitted signal that phase rotates in space to thereby "scan" the surrounding space.

The system of the present invention is in complete contrast from the Seal `438 system in that each transmitter antenna is a simple directional antenna, that is, a dipole antenna, generating a simple dipole magnetic field in space. In this regard, it must also be noted that Seal `438, in fact, teaches away from the use of simple dipole transmitting antennas, such as

in column 2, as generating a magnetic transmitted signal field that is not suitable for determining the location of receiver in the space surrounding the transmitting antenna.

In a further fundamental distinction, it must be noted that the Seal `438 system teaches the use of a single, simple dipole antenna in the tag to provide a receiving antenna field that will be directional with respect to the phase rotating fields generated by the complex transmitting antennas. Seal `438 teaches, however, that this simple receiving antenna is adequate to detect the phase relationships between the phase rotating fields transmitted by the transmitting antennas.

In the present invention, however, and in basic contrast from Seal `438, the transponder receiving antenna comprises a plurality of mutually orthogonal directional antennas to extract vector information from the simple dipole fields transmitted by each of the transmitters. According to the present invention, the use of a plurality of mutually orthogonal directional antennas is advantageous in allowing the transponder to extract vector information from the transmitted signals.

Further in this regard, and in still further distinction between the present invention and Seal `438, it must be noted that the Seal `438 attempts to determine the location of a tag by use of phase information from the transmitted signals, while the system of the present invention extracts vector information derived from relative signal strength information, which is a fundamentally different type of operation.

It must also be noted that the system of the present invention is further fundamentally distinguished from Seal `438 in that in the system of the present invention the transponder extracts vector information from the transmitted signals, but then transmits the vector information to the security controller where the vector information is used to generate vectors indicated the position of the transponder. In the Seal `438 system, and in complete contrast from the present invention, the phase information is processed in the tag rather than being

returned to the portions of the system connected to the transmitters, thereby substantially increasing the complexity and cost of the tag.

And lastly, it must be noted that, because of the above differences between the Seal `438 system and the system of the present invention, the Seal `438 system does not and cannot employ vector maps to readily and rapidly determine the location of the transponder, but must instead individually calculate the phase location of the tag for each separate location determination attempt.

It is, therefore, the belief and position of the Applicant that the present invention as recited in claims 24 and 37 and fully and patentably distinguished over and from Seal `438 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102. In addition, and because all of the dependent claims incorporate all recitations and limitations of independent claims 24 and 37, it is the belief and position of the Applicant that the present invention as recited in all of the dependent claims are likewise and fully and patentably distinguished over and from Seal `438 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102.

Next, considering Stippler `932 in combination with Seal `438, it must first be noted that a combination of the Stippler `932 system with the Seal `438 system is not feasible because of the very fundamental differences between the two systems. For example, the Stippler `932 attempts only to measure and compare the strength of the individual components of successive challenge signals to determine only whether or not there is a difference in the received signal strengths of successive challenge signals, and does not attempt to determine an actual location of the transponder. In complete contrast from Stippler `932, however, the Seal `438 system attempts to measure phase relationships among the components of each challenge signal to attempt to determine the location of the transponder.

The fundamental differences between the functions and operations of Stippler `932 and Seal `438 result in equally fundamental differences between the systems with regard to the

signals transmitted, the antennas used in the systems, and the processing of the signals. For example, because the Seal `438 system is attempting to obtain signal phase information relating to the transponder or tag position, the Seal `438 transmitters must transmit three mutually orthogonal phase controlled signals from three mutually orthogonal directional antennas in order to generate phase coordinated signals rotating in phase in space. In complete contrast, the Stippler `932 system, which seeks only to determine whether there is a signal strength difference between the challenge signals from different transmitters, requires only simple dipole loop antennas at the transmitters and does not require phase coordination among the challenge signals.

It is, therefore, apparent that Stippler `932 and Seal `438 cannot be combined in any way to result in any teachings relevant to the present invention because the Stippler `932 and Seal `438 systems are so fundamentally different in their purpose, operation, functions and structures. As such, any attempt to combine Stippler `932 with Seal `438 can result only in either Stippler `932 or Seal `438, but not in any form of hybrid system. As discussed above, however, the present invention is fully distinguished over and from Stippler `932 and Seal `438 and, for the same reasons, would be fully distinguished over and from any combination of Stippler `932 and Seal `438.

It is, therefore, the belief and position of the Applicant that the present invention as recited in claims 24 and 37 are fully and patentably distinguished over and from the combination of Stippler `932 with Seal `438 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102. In addition, and because all of the dependent claims incorporate all recitations and limitations of independent claims 24 and 37, it is the belief and position of the Applicant that the present invention as recited in all of the dependent claims are likewise and fully and patentably distinguished over and from the combination of Stippler `932 with Seal `438 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102. The Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw all rejections of

the claims over Seal `438 and the combination of Stippler `932 with Seal `438 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102, and allow the claims as presented herein above.

Next, the Examiner has further rejected claims 7-9 and 21 under 35 U.S.C. § 103 over Stippler `932 in combination with Stobbe et al. `560. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the following remarks.

The distinctions of the present invention as recited in independent claims 24 and 37 and in dependent claims 25-36 and 38-44 over Stippler `932 are discussed above, and thus need not be discussed in detail hereafter as the above discussions may be referred to as necessary. As discussed above, it is the belief and position of the Applicant that all of the present pending claims are fully and patentably distinguished over and from Stippler `932 for the reasons discussed above.

Considering the teachings of Stobbe et al. `560, therefore, Stobbe et al. `560 discloses a vehicle access control system using a two stage exchange of cryptographically encoded information between a vehicle-based control unit and a remote transponder. The first exchange is by short range low frequency signals and alerts the vehicle system that a transponder is nearby. The second exchange is by means of high frequency signals and both identifies the area of the vehicle the transponder is near, by signal strength, such as a door, and includes the actual exchange of encrypted information that authenticates the transponder to the vehicle system.

The two primary aspects of the teachings of Stobbe et al. `560 are, therefore, the use of encrypted communications and the use of low and high frequency band communications to reduce the authentication time by using each band most advantageously, such as using the high frequency band for the actual exchange of encrypted data because the high frequency band can support a higher data rate. Neither aspect of the Stobbe et al. `560 teachings,

however, relates to the present invention, which is directed to a system for determining vectors indicating the location of a transponder.

For example, Stobbe et al. `560 does not determine the location of a transponder except in a most general way, that is, is the transponder near the left or right side of the vehicle and is it nearer the front door handle or the back door handle. Stobbe et al. `560, therefore, and in contrast from both the present invention and Stippler `932, does not attempt to determine an actual location of the transponder by, for example, vectors and phase relationships. In this regard, Stobbe et al. `560 is perhaps more closely related to Stippler `932 than to the present invention in that Stobbe et al. `560 is concerned only with determining relative signal strength, and does not and cannot determine any form of vector between the system transmitters and the transponder.

Stating the very fundamental distinction between Stobbe et al. `560 and the present invention, and Stobbe et al. `560 and Stippler `932, in another way, Stobbe et al. `560 provides security for a vehicle by means of the exchange of encrypted codes. In fundamental contrast from Stobbe et al. `560, the present invention, and Stippler `932, attempt to determine the physical location of a transponder with respect to the vehicle wherein Stippler `932 does so for security reasons and the present invention does so for safety reasons. In another distinction between the present invention and both Stobbe et al. `560 and Stippler `932 is that Stobbe et al. `560 and Stippler `932 are security systems, that is, they prevent access to or the operation of a vehicle unless the transponder is appropriately authorized. The system of the present invention, however, is oriented more towards ensuring proper operation of a vehicle or its features, that is, to safety issues, by determining whether the transponder is in an approved position relative to the vehicle, such as in the driver's seat.

In brief, therefore, the teachings of Stobbe et al. `560 are not relevant to either the present invention as recited in the claims or to the teachings of Stippler `932 and cannot be combined with Stippler `932 to have any teaching that would be relevant to the present

invention. It is also apparent that Stobbe et al. `560 is not relevant to any of the previously or presently pending dependent claims as none of the dependent claims relates either to encryption of coded data or the use of two frequency bands.

It is, therefore, the belief and position of the Applicant that the present invention as recited in claims 24 and 37 and fully and patentably distinguished over and from Stobbe et al. `560 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102. In addition, and because all of the dependent claims incorporate all recitations and limitations of independent claims 24 and 37, it is the belief and position of the Applicant that the present invention as recited in all of the dependent claims are likewise and fully and patentably distinguished over and from Stobbe et al. `560 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102.

It is the belief and position of the Applicant that the present invention as recited in claims 24 and 37 are fully and patentably distinguished over and from the combination of Stippler `932 with Stobbe et al. `560 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102. In addition, and because all of the dependent claims incorporate all recitations and limitations of independent claims 24 and 37, it is the belief and position of the Applicant that the present invention as recited in all of the dependent claims are likewise and fully and patentably distinguished over and from the combination of Stippler `932 with Stobbe et al. `560 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102. The Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw all rejections of the claims over Stobbe et al. `560 and the combination of Stippler `932 with Stobbe et al. `560 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102, and allow the claims as presented herein above.

Next, the Examiner has rejected claims 8-9 and 21 over Stippler `932 in combination with Okada et al. `649. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the following remarks.

The distinctions of the present invention as recited in independent claims 24 and 37 and in dependent claims 25-36 and 38-44 over Stippler `932 are discussed above, and thus need not be discussed in detail hereafter as the above discussions may be referred to as necessary. As discussed above, it is the belief and position of the Applicant that all of the present pending claims are fully and patentably distinguished over and from Stippler `932 for the reasons discussed above.

Considering the teachings of Okada et al. `649, therefore, this reference is very similar to Stobbe et al. `560 and discloses a vehicle access control system using a two stage exchange of information between a vehicle-based control unit and a remote transponder. In the first stage, the vehicle unit transmits a challenge signal over a first, large area surrounding the vehicle and a transponder entering the first area will respond with a code communication, thereby alerting the vehicle unit that a transponder is in the area. In the second stage, the vehicle unit activates transmitter/receivers for a plurality of corresponding second, smaller areas surrounding, for example, door handles and so on. The vehicle unit detects when the transponder is within one of the second, smaller active areas, for example, by photocell, and initiates a second stage query and response wherein the transponder can transmit an authorization code to the vehicle unit.

The two primary aspects of the teachings of Okada et al. `649 are, therefore, the a two stage exchange of communications, one over a first, larger area and the second over s second, smaller area, and the transmission of an authentication code from the transponder to the vehicle when challenged. It is therefore apparent that Okada et al. `649 is in fact very similar to Stobbe et al. `560, except for the use of two frequency bands, and, like Stobbe et al. `560, it is apparent that neither aspect of Okada et al. `649 relates to the present invention, which is directed to a system for determining vectors indicating the location of a transponder.

For example, Okada et al. `649 does not determine the location of a transponder except in a most general way, that is, is the transponder near the left or right side of the vehicle and

is it nearer the front door handle or the back door handle. Okada et al. `649 therefore, like Stobbe et al. `560 and in contrast from both the present invention and Stippler `932, does not attempt to determine an actual location of the transponder by, for example, vectors and phase relationships.

Stating the very fundamental distinction between Okada et al. `649 and the present invention another way, Okada et al. `649 provides security for a vehicle by means of the exchange of encrypted codes and attempts to determine only the general location of a transponder in an attempt to reduce power consumption. In fundamental contrast from Okada et al. `649, the present invention attempts to determine the physical location of a transponder with respect to the vehicle. Another distinction between the present invention and both Okada et al. `649 and Okada et al. `649 is that these two references relate to security systems. That is, they prevent access to or the operation of a vehicle unless the transponder is appropriately authorized. The system of the present invention, however, is oriented more towards ensuring proper operation of a vehicle or its features, that is, to safety issues, by determining whether the transponder is in an approved position relative to the vehicle, such as in the driver's seat.

In brief, therefore, the teachings of Okada et al. `649 are not relevant to either the present invention as recited in the claims or to the teachings of Stippler `932 and cannot be properly combined with Stippler `932 to have any teaching that would be relevant to the present invention. It is also apparent that Okada et al. `649 is not relevant to any of the previously or presently pending dependent claims as none of the dependent claims relates either to the transmission of authentication codes or the use of wide area/small area transmission regions.

It is, therefore, the belief and position of the Applicant that the present invention as recited in claims 24 and 37 and fully and patentably distinguished over and from Okada et al. `649 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102. In addition, and because all of the dependent claims incorporate all recitations and

limitations of independent claims 24 and 37, it is the belief and position of the Applicant that the present invention as recited in all of the dependent claims are likewise and fully and patentably distinguished over and from Okada et al. `649 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102.

It is the belief and position of the Applicant that the present invention as recited in claims 24 and 37 are fully and patentably distinguished over and from the combination of Stippler `932 with Okada et al. `649 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102. In addition, and because all of the dependent claims incorporate all recitations and limitations of independent claims 24 and 37, it is the belief and position of the Applicant that the present invention, as recited in all of the dependent claims, are likewise and fully and patentably distinguished over and from the combination of Stippler `932 with Okada et al. `649 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102.

The Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw all rejections of the claims over Okada et al. `649 and the combination of Stippler `932 with Okada et al. `649 under the requirements and provisions of 35 U.S.C. § 103 and 35 U.S.C. § 102, and the allowance of the claims as presented herein above.

Next, the Examiner has rejected claim 17 under 35 U.S.C. § 103 over Stippler `932 in combination with Doron `724, which teaches the use of Hall effect sensors, and claim 18 under 35 U.S.C. § 103 over Stippler `932 in combination with Treharne `485, which teaches the use of calibration signals. The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the following remarks.

It must first be noted that the present invention is not directed to Hall effect sensors or calibration signals per se, but is instead directed to the invention as recited in claims 24 and 37, with the present equivalents of claims 17 and 18 operating to add further limitations to the recitations of claims 24 and 37 to direct the invention to specific embodiments thereof.

The new claims corresponding to original claims 17 and 18 are dependent from new independent claims 24 and 37 and thereby incorporate all recitations and limitations of independent claims 24 and 37 by dependency therefrom, and operate to add further recitations and limitations to those of claims 24 and 37. The new claims corresponding to original claims 17 and 18 are thereby distinguished over and from the teachings of Stippler `932 under 35 U.S.C. § 103 for the reasons discussed above with respect to claims 24 and 37, and are, for the same reasons, thereby distinguished over and from the teachings of Stippler `932 in combination with either or both of Doron `724 and Treharne `485 under the requirements and provisions of 35 U.S.C. § 103. The Applicant therefore respectfully requests that the Examiner reconsider and withdraw all rejections of the claims over Stippler `932 in combination with Doron `724 and Stippler `932 in combination with Treharne `485 under 35 U.S.C. § 103, and the allowance of the claims as presented herein above.

Lastly, the Examiner cites further prior art as pertinent to the present invention, but not in rejection of any of the claims of the present Application. The Applicant respectfully agrees with the Examiner that while Walton `658, Boschini `022 and Muller `239 are pertinent to the present invention, they do not, taken individually or in combination with each other or with any of the prior art considered above, teach or suggest the present invention under the requirements and provisions of either of 35 U.S.C. 102 and 35 U.S.C. § 103.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejection(s) should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability of the Stippler `932, Okada et al. `649, Stobbe et al. `560, Seal `438, Doron `724 and/or Treharne `485 references, the Applicant respectfully requests the Examiner to indicate the

specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,

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